Simplified Project Delivery Method Selection Guidance

March 02, 2017

Purpose:

In alignment with Reform VII, this guidance aids WSDOT staff in evaluating projects for the most appropriate Project Delivery Method (PDM). Each project's attributes, opportunities and risks will be considered in identifying the most cost effective and best value delivery method.

Goals:

- 1. Establish a systematic consistent approach to be applied throughout WSDOT,
- 2. Establish how and when a project should be assessed,
- 3. A scalable selection process,
- 4. Provide the documentation for PDM approval,
- 5. Identify approval levels and endorsements in the process.

Historically, Design-Bid-Build (DBB) has been the default for WSDOT projects unless an Alternative PDM, such as Design-Build (DB) or General Contractor/Construction Manager (GCCM) was pursued. In those cases, internal approval was required from the WSDOT Chief Engineer.

WSDOT is legislatively pre-approved and strongly encouraged to use DB as a PDM for projects with a cost of \$2 Million and greater. The use of GCCM by WSDOT currently requires approval from the Capital Projects Advisory Review Board, a separate entity outside of WSDOT.

Consistent with the goals identified above, WSDOT, working in collaboration with the Association of General Contractors (AGC) of Washington and the Association of Engineering Companies (ACEC), has developed the Project Delivery Method Selection Guidance (PDMSG) as outlined in this document. This guidance will be applied to all WSDOT projects from this point forward to determine the optimal PDM. Originally, the PDMSG evaluated three methods: DBB, DB, and GCCM. At this point, GCCM is set aside. Regional authorities will typically provide the approval of the Final PDM with additional approvals for larger projects and special cases.

The PDMSG focus group evaluated selection processes of other DOT's and agencies in US and Canada. The Project Delivery Selection Matrix from University of Colorado, Boulder, and Colorado DOT was selected as a foundation for developing WSDOT's PDMSG (See http://www.colorado.edu/tcm/project-delivery-selection-matrix. The guidance in this document is tailored to incorporate WSDOT's policies and values while retaining the data and evaluation criteria applicable to all transportation projects. After

assessing the PDM evaluation methods used by the transportation industry and other entities, a fundamental basis for using a PDM selection process emerged. No one PDM is optimal for all projects.

- The PDMSG is integrated with the existing WSDOT Project Development process.
- All projects are evaluated in two steps:
 - o The Probable PDM is established during the Scoping Phase prior to the approval of the Project Profile by Region Program Management Offices while collaborating with region subject experts and documented in CPMS.
 - o The Final PDM is determined once the Project Profile is approved, a work order is set up for the project, and the project is assigned to a Region Project Engineer's Office. This Final PDM is determined at 10% to 30% design.
- The process to determine the Probable PDM and the Final PDM is scalable to the size and complexity of the project.
- A Selection Checklist is used during the Final PDM and is used to quickly identify projects that have an obvious optimal PDM.
- A Selection Matrix (if needed as a second step) is used for more complex projects to determine the Final PDM.

Workshop is required for projects with costs of \$100 Million and greater to determine the Final PDM.

The PDMSG provides a scalable, consistent, and fair process to determine the PDM. The process provides the documentation needed to support the PDM selection and gain approval. The approval process and timing is clearly identified and is integrated within the existing project development process. Using a systematic and unbiased process to determine the most appropriate PDM, based on project attributes, opportunities and risks, will result in the most cost effective and best value project delivery.

Introduction

This guidance document provides a systematic approach for selecting the optimal PDM for WSDOT projects. It provides the definitions, background, tools and processes to accomplish the following tasks and deliverables:

- Assist WSDOT staff to determine the best PDM for each project.
- Document the PDM decision and approval process.
- Provide real time snapshot in time of the current state of WDOT's use of project delivery methods.
- Provide the ability to track trends of the project delivery method from year to year.

The previous PDM selection process automatically assumed DBB as the PDM unless approval to use DB or GCCM as the contracting method was pursued. This document provides progressive evaluation tools

to determine the optimal PDM for projects, with each tool scalable to the appropriate level of effort based on the type and size of the project. The original policy was that every project was required to be evaluated for PDMSG. WSDOT's direction now is that projects less than \$2 million and preservation projects less than \$10 million are programmatically excepted from PDMSG.

PDMSG is integrated into the existing project development processes as outlined in the WSDOT Design Manual (M22-01), including the Project Deliverables Expectation Matrix (Section 305.04(1)(b)). It also coordinates with the CRA-CEVP workshop processes as described in the Project Risk Management Guide. Ultimately, the PDM determination will be integrated into the Design Document Package contained in the Project File.

This document has used the University of Boulder, Colorado, Project Delivery Selection Matrix located at: http://www.colorado.edu/tcm/project-delivery-selection-matrix, as a starting point in developing this WSDOT guidance. Much of the data, background, and some of the process documents are also from that resource, although this guidance was further developed to meet the goals, values, policies and procedures of WSDOT. This is a living document and periodic updates are anticipated to incorporate continual improvement to this guidance and process through lessons learned and changes in WSDOT policies and procedures.

A team with representation from the Construction Division, the Development Division, the Capital Development Program Management Office, the NW Region and Olympic Region developed the original guidance. Additionally, this document has contributions from the WSDOT/AGC/ACEC Design-Build Committee, the Design-Build Work Group and numerous other key WSDOT staff.

Project Delivery Method Selection Overview

Definitions

In addition to terms defined in the WSDOT Design Manual, the following terms are defined for use with this guidance.

Alternative Project Delivery Method

An Alternative Project Delivery Method refers to any PDM other than traditional DBB. In this guidance, it refers to DB and GCCM.

Selection Checklist

The Selection Checklist is an initial tool developed to quickly evaluate projects using a series of questions.

Selection Matrix

The Selection Matrix is a form of decision matrix developed to evaluate the probability of each of the

possible Project Delivery Methods to meet the Project Goals.

Project Goals

Project Goals are observable and can measure progress toward project objectives. Typically, Project Goals are the highest priority end results necessary for a successfully delivered project. Project Goals differ, but may overlap with goals established as criteria in a Design-Build procurement process. Project Goals and their related Project Delivery Goals are evaluated with numerical scores.

Project Delivery Goals

Project Delivery Goals are goals related to the characteristics of the PDMs. A Project Goal may be identical to a Project Delivery Goal or it may have a related goal determined by the Project Goal specifics, causes or risks. Project Delivery Goals are a refinement of the Project Goals and are used to evaluate the ability of the PDMs to meet the Project Goals based on the characteristics of the PDMs.

Weights

Weights are a way to apply relative importance to Project Goals as part of the evaluation process in the Selection Matrix.

Ratings

Ratings are provided in the Selection Matrix and show the relative value of each PDM in achieving the associated Project Goal. Modifications to the Project Goals or new Project Goals may require that the associated ratings be adjusted or created. Appendix A.6, PDM Attribute Comparison Spreadsheet, provides data on the pros and cons of each potential PDM as it relates to project attributes and Project Goals.

The Benefits and Timing of Project Delivery Method Selection

After evaluation of the methods used by the transportation industry and other entities, a fundamental basis for using a Project Delivery Method Selection process emerged. No single PDM is optimal for every project; therefore, each project should be evaluated to determine the best PDM.

Some of the benefits associated with selecting the optimal PDM for WSDOT projects include:

- Achieving the best price or best value for the project,
- Achieving critical schedule requirements for the project including key milestones,
- Achieving the best quality and maximum scope within the limitations of cost, schedule and other project limits,
- Aligning the Design and Construction Office staff resources with the PDM to increase contract administration efficiency,
- Aligning the attributes of the project with the PDM to best meet the Project Goals,
- Utilize the characteristics of the PDM to effectively mitigate or respond to project risks.

Early identification of the PDM enhances the benefits of using this PDM for the project. While evaluating

project delivery methods utilized nation-wide and WSDOT project development guidance, it became clear that the benefits associated with any PDM are reduced or negated if the PDM is not selected early in the design process.

The benefits of early identification of PDM include:

- The Project Management Plan (PMP) —needs will vary based on the PDM selected. Early selection maximizes the benefits of having a solid PMP.
- Early selection allows effective early design decisions that affect final costs.
- Early selection facilitates selecting the project office staff and early determination of design effort/resource loading, scheduling and budgeting.
- Early selection facilitates incorporation of PDM risk allocation into the cost estimate.
- Scoping estimates will be more accurate by allowing the team to estimate using factors appropriate to the PDM.

The Project Delivery Methods Available to WSDOT

The Project Delivery Method is the process by which a transportation project is comprehensively designed and constructed from project definition to closeout. The different Project Delivery Methods are distinguished by the manner in which contracts between WSDOT, designers and contractors are formed and the technical relationships that evolve between each party inside those contracts.

Currently, WSDOT primarily uses two types of Project Delivery Methods Design-Bid-Build (DBB) and Design-Build (DB). In the future a third delivery method - General Contractor/ Construction Manager (GCCM) may be pursued. The Project Delivery Method determines when the parties become engaged and influences ownership and impact of changes on project cost. No single Project Delivery Method is ideal for all projects. Each project must be examined individually to determine how it aligns with the attributes of each available Project Delivery Method.

Design-Bid-Build (DBB):

Design-Bid-Build is the traditional PDM used by WSDOT. When using DBB, WSDOT designs, or retains a designer to furnish complete design services, and then advertises and awards a separate construction contract based on the WSDOT or designer's completed construction documents. In DBB, WSDOT has control over the entire process, is responsible for the details of design during construction, and as a result, is responsible for the cost of any errors or omissions encountered in construction. In DBB, selection of the contractor is based solely on price, with award of the contract based on the lowest bid.

Design-Build (DB):

Design-Build is a PDM in which WSDOT procures both design and construction services in the same

contract from a single, legal entity referred to as the Design-Builder. WSDOT typically uses a two-phase selection process, where Design-Builders are shortlisted based on qualifications in the first phase and then selected based on price and approach in the second phase. The DB project delivery method allows the phases of design and construction to overlap. The Design-Builder becomes involved early in project development, at approximately the 15% to 30% design level, offering opportunities for innovation and improved constructability, and confirming project costs early. The Design-Builder controls the details of design and is typically responsible for the cost of any design errors or omissions encountered during construction.

Per RCW 47.20.785, WSDOT is authorized and is strongly encouraged to use the Design-Build project delivery method for projects that cost \$2 Million or more.

RCW 47.20.785

Design-build—Qualified projects.

The department of transportation is authorized and strongly encouraged to use the design-build procedure for public works projects over two million dollars when:

- (1) The construction activities are highly specialized and a design-build approach is critical in developing the construction methodology; or
- (2) The projects selected provide opportunity for greater innovation and efficiencies between the designer and the builder; or
 - (3) Significant savings in project delivery time would be realized.

[2015 3rd sp.s. c 18 § 2; 2006 c 37 § 1; 2001 c 226 § 3.]

General Contractor / Construction Manager (GCCM):

General Contractor/Construction Manager is a PDM in which WSDOT contracts separately with a contractor as a Construction Manager and either performs the design or contracts with an engineering firm to provide a design. The Construction Manager is selected early in the project development phase (10% to 30% Design) to provide design and constructability input. WSDOT retains control of the design of the project and is typically responsible for design errors and omissions during construction on GCCM projects. As the design nears completion, WSDOT and the Construction Manager work to negotiate a Maximum Allowable Construction Cost (MACC) for the project. Upon successful negotiation of the MACC, the Construction Manager becomes the General Contractor and works at-risk for the final cost and construction schedule. The early contractor input associated with GCCM delivery is especially suited for projects that are technically complex, require complicated phasing and staging, or require operability of the facility (such as a ferry terminal) during construction. WSDOT must get approval from the Capital Project Advisory Review Board (CPARB), Project Review Board (PRB) subcommittee, before using the GCCM project delivery method.

At this point GCCM has been taken aside and removed from the PDM Checklist and the PDM Matrix due

to WSDOT's lack of experience with GCCM as a project delivery method. WSDOT will continue to pursue pilot projects using GCCM gain experience project by project. WSDOT attempted to provide legislation to eliminate the CPARB approval process and provide more of a level playing field to the WSDOT owned approval process with DB but was not successful.

The Probable Project Delivery Method (Probable PDM):

The Probable PDM is a preliminary determination that is used for project planning until the Design Project Office assigned to the project in the Final PDM can approve the PDM. The Probable PDM is determined in the scoping stage of a project before the approval of the Project Profile / Project Summary. The Probable PDM process is to provide the **PDM intent** for the project as **initial direction to the project office**, with the basis for that Probable PDM selection. The Probable PDM will be a field that will be included with the project summary/profile. The Probable PDM is much more elementary than the Final PDM and does not require the use of the PDM Checklist or PDM Matrix. The Probable PDM will be entered into the Capital Program Management System (CPMS) by the Region Program Management Offices, and is reported by the HQ Capital Project and Development Management Office (CPDM) for the current 6-Year Plan (17-19,19-21, 21-23).

Final Project Delivery Method (Final PDM):

Final PDM is the PDM determination submitted for approval in preliminary design. Final PDM selection occurs after the project is assigned to a Project Engineer's Office (approximately 10% -30% design). The Project Engineer will determine the Final PDM using either the PDM Selection Checklist, the PDM Selection Matrix or both.

For the PDM Checklist and PDM Matrix, see Appendix 1 and 2

Final Project Delivery Method Selection Process						
Project Cost	Selection Document/Tools	Authorizations				
Less Than \$2 Million	Projects will be Design Bid Build	Programmatically Except				
\$2 Million or Greater but Less than \$25 Million	Selection Checklist	 Signature by Project Engineer PDE / EM Manager Approval 				

\$25 Million or Greater but Less than \$100 Million	Selection Checklist and Consider Selection Matrix	 Signature by Project Engineer PDE / EM Manager Endorsement ASDE/ASCE Endorsement Regional Administrator Approval 				
\$100 Million or Greater	Selection Matrix and Work Shop	 Signature by Project Engineer PDE / EM Manager ASCE/ASDE Endorsement Regional Administrator Approval 				
Exception or Change of Final PDM (regardless of Project Cost)	NA	 PDE / EM Manager Endorsement ASCE/ASDE Endorsement Regional Administrator Endorsement Chief Engineer Approval for Projects greater than \$100 million. 				

Notes:

The Project Cost is the total of the Preliminary Engineering and Construction Costs.

Projects under \$2 million are programmatically exempt from PDMSG and will be Design Bid Build.

Preservation Paving projects under \$10 million are programmatically exempt from PDMSG and will be Design Bid Build.

Design Build's most likely application would be for improvement projects in the mobility, economic initiatives or environmental subprograms where there are opportunities for innovation, greater efficiencies or significant savings in project delivery time.

Final Project Delivery Method Selection Checklist

(Appendix 1)

	Project Date:						
	Title: WIN:						
	Route: PIN:						
M	MP(s):			tom or			
(Cost:	attached to this fo	orm.				
Pa	Part I — Cost RCW 47.20.785 does not encourage Design-Build for a project contract cost (PE & Construction) less than \$2 Million						
Is the Project Estimate less than \$2 Million?							
\square Yes — A selection process and authorization are not required — the delivery method is Design-Bid-Build.							
	□ No — Continue to Part II						
Pa	rt II — RCW 47.20.785 Project Qualifications for Design-Build Method						
1. Are construction activities highly specialized?							
2.	Is a DB approach critical in developing the construction methodology?		☐ Yes	□ No			
3.	Does the project provide opportunity for greater innovation & efficiencies between the design	er & builder?	☐ Yes	□ No			
4.	Would use of DB result in significant reduction to the overall project schedule or critical milest	ones?	☐ Yes	□ No			
If Y	<u>Yes</u> was selected for <u>any</u> of questions 1 through 4 above, Design-Build is a viable PDM option. (Go to Part III)					
lf <u>I</u>	<u>No</u> was selected for <u>all</u> of the questions 1 through 4 above, it indicates Design-Bid-Build as the	PDM — get aut	horizatior	າ (end).			
Pa	rt III — Project Questions						
	A. Are there 3rd party agreements with local government or agencies that require a full design and the second seco	ign before	☐ Yes	□ No			
	execution? (Is a significant portion of the project impacted?)						
	Justification:						
	B. Are there long lead, lengthy environmental permits or ROW issues that would delay start of						
	Construction? (Is a significant portion of the project impacted?)						
Ш	Justification:						
\Box	C. Is early obligation of funds necessary? (Such as a deadline to obligate grant funding)		□ No	☐ Yes			
\supset							
	Justification:						
H	D. Is there time to prepare 100% design?		□ Yes	□ No			
CF	L	L					
S	Justification:						
	E. Is there a need to compress the schedule?			□ Yes			
	Justification:	L					
	F. Do funding limits restrict when the schedule can start?						
	(Such as the Biennium)		☐ Yes	□ No			
	Justification:						
	G. Are there significant risks that could be better managed by others than WSDOT?		□ No				
_	5. The there significant risks that could be better managed by others than wabot:			☐ Yes			
ON	Justification:	L					
	H. Does the project involve specialty engineering or high-tech designs or have other opportunities for						
INNOVAT	innovation?			☐ Yes			
	Justification:	_	II.				
	I. Does the project require complex phasing and staging with the possibility of high impacts	to the public?	□ No	☐ Yes			
Z							
_	luctification	_					

Final Project Delivery Method Selection Checklist

(Appendix 1)

	rt III — Project Questions					
Υ	J. Does an existing road or facility need to remain in service? (no options for detour, or no alternate facility available, and a significant portion of the project is impacted)					
\vdash	□ No	☐ Yes				
Justification:						
LE	K. Is WSDOT willing to give up control of design and/or construction on this project?	□ No	☐ Yes			
1P						
\boxtimes	Justification:					
CC	L. Are critical 3rd party involvement and changes likely during design & construction?	☐ Yes	□ No			
	Justification:					
	M. Is early certainty of the total project cost important?	□ No				
M. Is early certainty of the total project cost important? (Increased certainty of total cost early in the project needed due to funding or project constraints)						
C	Justification:					
Sur	m each column to the right—a checked answer is worth one (1) point. The column with the most points indicates the					
	commended delivery method.	<u>DBB</u>	<u>DB</u>			
Pro	oject Delivery Method indicated from the responses to the questions in Part III (above) Score:					
	□ DBB □ DB □ Inconclusive					
	project cost is: less than \$25 million — get Authorization Level 1 (below) \$25 million or greater, but less than \$100 million — get Authorization Levels 1 & 2 (below) \$100 million or greater — apply Project Delivery Selection Matrix / Workshop					
Fir	nal Project Delivery Method Selected					
	☐ Design-Bid-Build ☐ Design-Build					
Au	uthorization Level 1					
Pro	oject Engineer					
Na	ame: Signature:					
PD	DE/EM Manager					
Na	ame: Signature:					
Au	uthorization Level 2					
AS	SCE/ASDE					
Name: Signature:						
Re	egional Administrator					
Name: Signature:						

Attach project information, assumptions and additional justification to Form

Final Project Delivery Method Selection Matrix

Project	Date:
Title:	WIN:
Route:	PIN:
MP(s):	List any additional PINs at bottom
Cost:	or attached to this form.

- Begin with the list of generic considerations offered below; modify or add entries as required. Indicate if the entry is a Project Delivery Goal by checking/selecting the Goal box; if not, leave blank.
- Weights: Enter numbers indicating the relative priority of each Project Delivery Goal (checked/selected)—higher numbers are higher priority—1 is the lowest.
- Ratings: Numbers from 1 to 10, with 1 lowest and 10 highest; a two point range is provided for the generic entries as given. Select the Rating that best fits the specifics of your Project Delivery Goal. If a Goal is modified or rewritten, confirm that the ratings are appropriate and revise them accordingly. Any new Goals added to the Matrix will need to have ratings provided based on the probability of each PDM to meet the Goal.
- Score: Multiply the selected Rating of each method by the priority Weight for each Goal. Total the scores for each method (column) and compare.

			Canaidanatian	Majaht	D	ВВ	D	В
			Consideration	Weight	Rating	Score	Rating	Score
		Goal	Minimize project delivery time					
	_				4 5		9 10	
	ш	Goal	Meet a specific critical Milestone or Completion date					
	\vdash	Goal	Utilize (federal) funding by a certain date		4 5		9 10	
O L E	_	Guai	Othize (lederal) fullding by a certain date		6 7		9 10	
		Goal	Effectively manage weather, environmental and/or other					
E D			construction windows		6 7		9 10	
H		Goal	Funding limitations impacts ability to compress the schedule					
C			and/or contract all the work early in the process (such as the		9 10		6 7	
S	\vdash	C I	biennium, grants, etc.)					
		Goal						
		Goal						
	_							
		Goal	Minimize project cost					
	_				6 7		6 7	
	ш	Goal	Complete the project on budget					
16	\vdash	Caal	Maximiza the president energy and insurance and within the		6 7		6 7	
Z	_	Goal	Maximize the project scope and improvements within the budget		4 5		8 9	
		Goal	Project cost must not exceed a specific amount					
NN					6 7		8 9	
ST/FL		Goal	Determine the total project cost as early as possible in the					
	L.		schedule		4 5		9 10	
	ш	Goal	Meet 3rd Party requirements with possible impacts in design					
0	Н	Goal	and construction		6 7		4 5	
0	_	Guai						
		Goal						
		Goal	Meet or exceed project quality/scope requirements					
	l		—utilizing opportunities for innovation		6 7		9 10	

Final Project Delivery Method Selection Matrix

Consideration		Weight	DBB			DB		
		weight	Rati	ng	Score	Rating	Score	
☐ Goal								
~	construction constraints and/or standards (such as		8	9		5 6		
∀ ☐ Goal	aesthetics) WSDOT maintains control of specific project elements (such							
	as significant ROW or environmental impacts)		8	9				
⋖ □ Goal			П	Ī				
LS								
☐ Goal								
_ ☐ Goal	•							
Z	maintenance and operations is not part of DB contract)		9	10		5 6		
_ ☐ Goal	Maximize capacity and mobility of improvements							
4			6	7		9 10		
S Goal	•							
O ☐ Goal	during construction Incorporate opportunities for innovation and efficiencies to		6	7		9 10		
Z ☐ Goal	meet specific requirements		4	5		9 10		
☐ Goal	· · · · · · · · · · · · · · · · · · ·							
Z	transfer and innovation (such as environmental risks)		4	5		9 10		
☐ ☐ Goal								
_	would be project neutral unless the project is larger and		6	7		8 9		
	more complex—then use the ratings ranges provided)							
Z ☐ Goal								
☐ Goal			П	П		ПП		
Delivery met	hod indicated by this matrix $ ightarrow$ $ ightarrow$		Total	ls—				
, ,		_						
Final Proied	t Delivery Method Selected							
	☐ Design-Build ☐ Design-Build							
Authorizati								
Project Engineer								
Name:	Signature:							
PDE/EM Manager								
Name: Signature:								
ASCE/ASDE								
Name:	Signature:							
Regional Ac	Iministrator							
Name:	Signature:							

Attach project information, assumptions and additional justification to Form